

# Application No. 09/779,334, Amendment Dated June 14, 2004, Replacement Sheet

## Subtilisin Structure-Function Correlation

## Thermostablility Motifs

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Majority				3a3.seq	pes. sed	4c6,seq	3b3, sed	3e2, sed	6h9.sed	3a7.seq	SbII.seq	4d10, seq	lf6,seq	i. 4c2.seq	Savinase.seq

FIG 2A

Application No. 09/779,334, Amendment Dated June 14, 2004, Replacement Sheet

Subtilisin Structure-Function Correlation

Thermostablility Motifs

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### FIG 2B

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Subtilisin Structure-Function Correlation

Thermostablility Motifs

Majority	QNNRRANFS QYGTGIDIVAPGVNVQSTYPGNRYAS LNGTSM P	A T P H V A G A A A L V K	
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pes. de	QNNRRANFS QYGTGIDIVAPGVNVQSTYPGNRY [V]S [M]S GTSMI	IATPHVAGAALVK	523
dc6.seq	Q N N R R A N F S Q Y G T G I D I V A P G V N V Q S T Y P G G Q Y A E L S G T S M A	IASPHVAGAALVK	523
Jb3.sed	QNNRRANFS QYGTGIDIVAPGVNVQSTYPGNRYASLSGTSHA	IATPHVAGAAALVK	523
3e2.seq	Q N N R R A N F S Q Y G F G I D I V A P G V N V Q S T Y P G N R Y A S L S G T S M I	IATPHVAGAALVK	523
eh9.seq	Q N N R R A N F S Q Y G T G I D I V A P G V N V Q S T Y P G N R Y A S L N G T S M P	IATPHVAGVAALVK	523
3a7.seq	Q N N R R A N F S Q Y G T G I D I V A P G V N V Q S T Y P G N R Y A S L N G T S M P	ATPHVAGAALVR	523
Sb11.seq	Q N N R R A N F S Q Y G T G I D I V A P G V N V Q S T Y P G N R Y V S M N G T S M N	IATPHVAGAALVK	523
4d10.seq	ONNRRANFS OY GTGIDIVAP GVNV OSTYP GNRY VSM NGTSM P	IATPHVAGAAALVK	523
1f6.seq	ONNRRANFS OY GT. GIDIVAP GVNV OSTYP GNRY W GTSM A	A T P H V A G V A A L V K	523
4c2.seq	Q N N R R A N F S Q Y G T G I D I V A P G V N V Q S T Y P G N R Y [V] S [M] N G T S M P	IATPHVAGVAALVR	523
	Q N N R R A N F S Q Y G T G I D I V A P G V N V Q S T Y P G N R Y A S L S G T S M P	SATPHVAGVAALVK	523

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Subtilisin Structure—Function Correlation pH Shifting Motifs

FIG 2D

GASEVPCEPSTODGNGHGTHVAGTIAALNNSIGVLGVAPSABLYAVKVLGASGSVSSIAQGLE 190

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Subtilisin Structure—Function Correlation pH Shifting Motifs

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Majority		Sel.seq	6a4.seq	9b4.seq	lc10.seq	7a2.seq	4d7.seq	6b6.seq	nes And	Jrk sen	6b11.seq

Savinase seq NAGNNGMHVANLS LGSPSPSPSPTLE QAVNS ATSRGVLVVAAS GNSGAGS ISYPARYANAWAVGATD 188



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Subtilisin Structure—Function Correlation pH Shifting Motifs

Majority	QNNNRASFSQYGAGLDI	VAPGVGVQST	YPGNRYASLNG	TSMATPHVAG	VAALVKQKNPS	WSNVX
	140	150	160	170	180	061
5el seq	QNNNRASFSQYGAGLDI	VAPGVGVQST	YPGNRYASLNG	TSMATPHVAG	AAALVK	523
6a4 seq	RASFS	VAPGVGVQST	YPGSTYASLNG	TSMATPHVAG	VAALVK	523
	ASFSQY	VAPGVGVQST	YPGSTYASLNG	TSMATPHVAG	VAALVK	523
lc10 seq	QNNNRASSQYGAGLDI	VAPGVGVQST	YPGNRYASLNG	TSMATPHVAG	VAALVK	523
7a2 seq	QNNRRANFSQYGTGIDI	VAPGVEIEST	Y P G S S Y D S L R G	TSMATPHVAG	AAALVK	523
4d7 seg	QNNRRANFSQYGTGIDI	VAPGVNVQST	YPGNRYASLNG	TSMATPHVAG	VAALVK	523
eb6 seq	QNNNRASFSQYGAGLDI	VAPGVNVQST	YPGSTYDSLSG	TSMATPHVAG	VAALVK	523
eg6 seq	QNNRRANFSQYGTGIDI	VAPGVNVQST	YPGGQYAELSG	TSMASPHVAG	AAALVK	523
Ic6 seg	QNNRRANFSQYGTGIDI	VAPGVNVQST	YPGNRYASLNG	TSMATPHVAG	VAALVK	523
6b11 seq	QNNRRANFSQYGTGIDI	VAPGVNVQST	YPGNRYASLNG	TSMATPHVAG	VAALVK	523

580 Q N N N R A S P S Q Y G A G L D I V A P G V N V Q S T Y P G S T Y A S L N S T S M A T P H V A G A A A L V K G K N P S W S N V X Savinase seg



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Subtilisin Structure—Function Correlation Activity in DMF Motifs

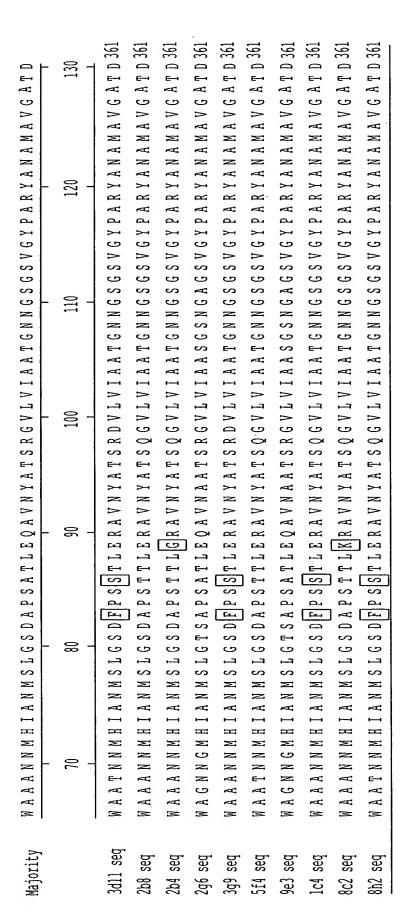
Majority	GASFVPGEPSTODGNG	HGTHVAGTIAAL	NNSIGVLGVAP	NADLYAVKVL	GANGSGSVSGI	AQGLE
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3d11 seq	STODGNG	SHGTHVAGTVAAL	NNSIGVIGVAP	SADLYAVKVL	GANGSGSVSGI	ARGIE 166
2b8 seq	STODGN(	GHGTHVAGTVAAL	NNSIGVIGVAP	SADLYAVKVL	GANGRGSVSGI	A R G L E 166
2b4 seq	STODGN	GHGTHVAGTVAAL	NNSIGVIGVAP	SADLYAVKVL	GANGRGSVSGI	A Q G L E 166
2g6 seg	N Đ O T L	GHGTHVAGTIAAL	NNNVGVLGVAP	NVELYGVKVL	GASGSGSISGI	A Q G L Q 166
3g9 seg	STODGN	GHGTHVAGTVAAL	NNSIGVIGVAP	SADLYAVKVL	GANGRGSVSGI	A Q G L E 166
5f4 seq	STODGNG	SHGTHVAGTIAAL	NNSIGVLGVAP	NADLYAVKVL	GANGSGSVSGI	ARGIE 166
9e3 seq	STODGN(	GHGTHVAGTIAAL	NNNVGVLGVAP	NVELYGVKVL	GASGSGSISGI	A Q G L Q 166
1c4 seq	STODGNG	HGTHVAGTVAAL	NNSIGVIGVAP	SADLYAVKVL	GANGRGSVSGI	A Q G L E 166
8c2 seq	ONDONS	SHGTHVAGTIAAL	NNSIGVLGVAP	NAELYAVKVL	GANGRGSVSGI	A Q G L E 166
8h2 seq	STQDGNG	HGTHVAGTIAAL	NNSIGVIGVAP	NADLYAVKVL	GANGSGSVSGI	ARGLE 166

GASFVPGEPSTQDGNGHGTHVAGTIAALNNSIGVLGVAPSAELYAVKVLGASGSGSVSSIAQGLE193 Savinase seq



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## Subtilisin Structure—Function Correlation Activity in DMF Motifs



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Savinase seq

FIG 2H

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## Subtilisin Structure—Function Correlation Activity in DMF Motifs

Majority	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYASLNGT	SMATPHVAG	VAALVKQKNPS	WSNVK
	140	150	160	. 170	180	190
3d11 seq	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYASLNGT	SMATPHVAG	AAALVK	523
2b8 seq	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYASLNGT	SMATPHVAG	VAALVK	523
2b4 seq	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYASLNGT	SMATPHVAG	VAALVK	523
2g6 seq	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYVSMNGT	SMATPHVAG	VAALVK	523
3g9 seq	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYASLNGT	SMATPHVAG	VAALVK	523
	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYARLNGT	SMATPHVAG	VAALVK	523
9e3 seq	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYVSMNGT	SMATPHVAG	VAALVK	523
1c4 seq	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYASINGT	SMATPHVAG	AAALVK	523
8c2 seq	QNNRRANFSQYGTGIDIV	APGVNVQSTYP	GNRYASLNGT	SMATPHVAG	AAALVK	523
8h2 seq	Q N N R R A N F S Q Y G T G I D I V	APGVNVQSTYP	GNRYASLNGT	SMATPHVAG	VAALVK	523

590 Q N N N R A S F S Q Y G A G L D I V A P G V N V Q S T Y P G S T Y A S L N G T S M A T P H V A G A A A L V K Q K N P S W S N V K

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